

Appl. No. : 10/074,534
Filed : February 11, 2002

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Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 4/9/02

By: Joseph J. Mallon
Joseph J. Mallon
Registration No. 39,287
Attorney of Record
Customer No. 20,995
(619) 235-8550

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

[0001] This application claims priority to U.S. Provisional Application No. 60/268,337, filed February 12, 2001; U.S. Provisional Application No. 60/279,256, filed March 27, 2001; U.S. Provisional Application No. 60/311,609, filed August 9, 2001; U.S. Provisional Application No. 60/323,649, filed September 19, 2001; U.S. Provisional Application No. 60/332,696, filed November 13, 2001; U.S. Provisional Application No. 60/333,724, filed November 28, 2001; and U.S. Provisional Application No. 60/340,454, filed December 7, 2001; all of which are hereby incorporated by reference in their entireties. This application is related to, and incorporates by reference in their entireties, co-owned and co-pending U.S. Patent Application Serial Numbers: 10/074,563; 10/074,149; 10/074,722; 10/074,633; and 10/074,564, all of which were filed on February 11, 2002.

[0107] A series of Si-containing films were deposited onto a SiO₂ substrate (without a nucleation layer) at a pressure of 40 torr using trisilane and germane. The trisilane flow rate was constant at 77 sccm (hydrogen carrier, bubbler) for the examples of Table [9] 10. Germane flow (10% germane, 90% H₂) and deposition temperature were varied as shown in Table [9] 10. Germanium concentration (atomic %) and thickness of the resulting SiGe films were determined by RBS, and surface roughness was determined by atomic force microscopy (AFM). The results shown in Table [9] 10 demonstrate that highly uniform films can be prepared over a range of temperatures and flow rate conditions, particularly over a large range of germane concentration. High deposition rates are achieved at relatively low temperatures without sacrificing uniformity.

Heading that appears after paragraph [0107]:

TABLE [9] 10

IN THE ABSTRACT:

Chemical vapor deposition processes utilize higher order silanes and germanium precursors as chemical precursors. The processes have high deposition rates yet produce more

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uniform films, both compositionally and in thickness, than films prepared using conventional chemical precursors. In preferred embodiments, higher order silanes are [trisilane is] employed to deposit SiGe-containing films that are useful in the semiconductor industry in various applications such as transistor gate electrodes.

IN THE CLAIMS:

1. (Amended) A process for depositing a non-single crystalline SiGe-containing material onto a surface, comprising:

 providing a chemical vapor deposition chamber having disposed therein a substrate[,] ;

 introducing a gas comprised of a higher-order silane and a germanium precursor to the chamber; and

 depositing a non-single crystalline SiGe-containing film onto the substrate.

20. (Amended) A process for making a graded SiGe-containing film, comprising:

 providing a substrate disposed within a CVD chamber[,] ; and

 depositing a graded SiGe-containing film onto the substrate by thermal CVD using a deposition gas comprising amounts of trisilane and a germanium precursor that are varied during deposition.